

EMERGENCY OPERATIONS PROCEDURES FOR DROUGHT

**DROUGHT ASSESSMENT AND RESPONSE PLAN**

**FOR**

**NORTH CAROLINA**

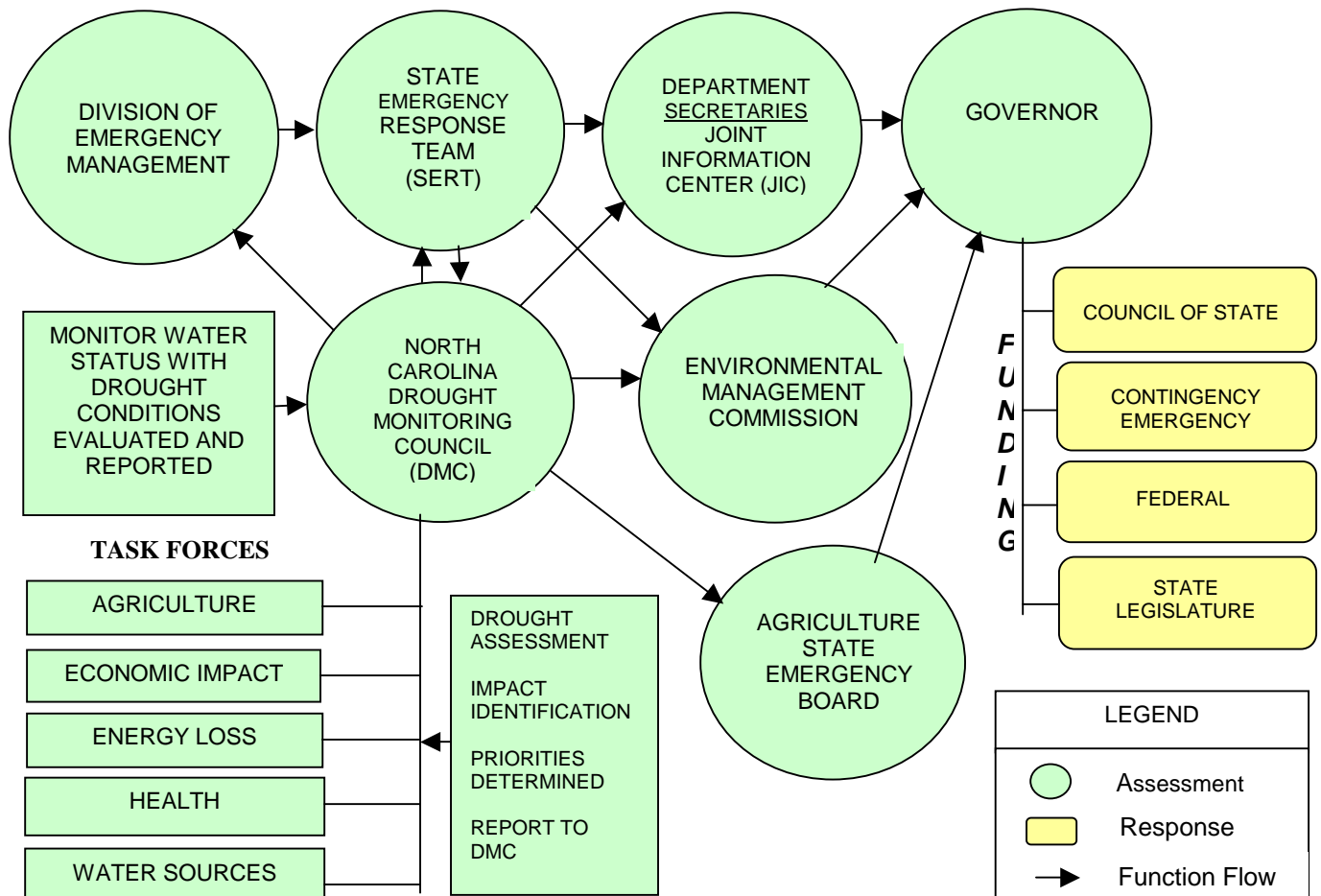


Department Of Environment and Natural Resources,  
Department Of Crime Control and Public Safety  
Department of Commerce,  
Department of Insurance,  
Department of Agriculture, and  
Department of Human Resources

December 2001

6. Concept of Operations. North Carolina uses a dual system of assessment and response to deal effectively with drought. This dual system operates as shown below.

### Drought Assessment and Response System



# NORTH CAROLINA DROUGHT MONITORING COUNCIL

## Drought / Water Availability Conditions

Division of Water Resources

Current Conditions

Outlook

Recommendations

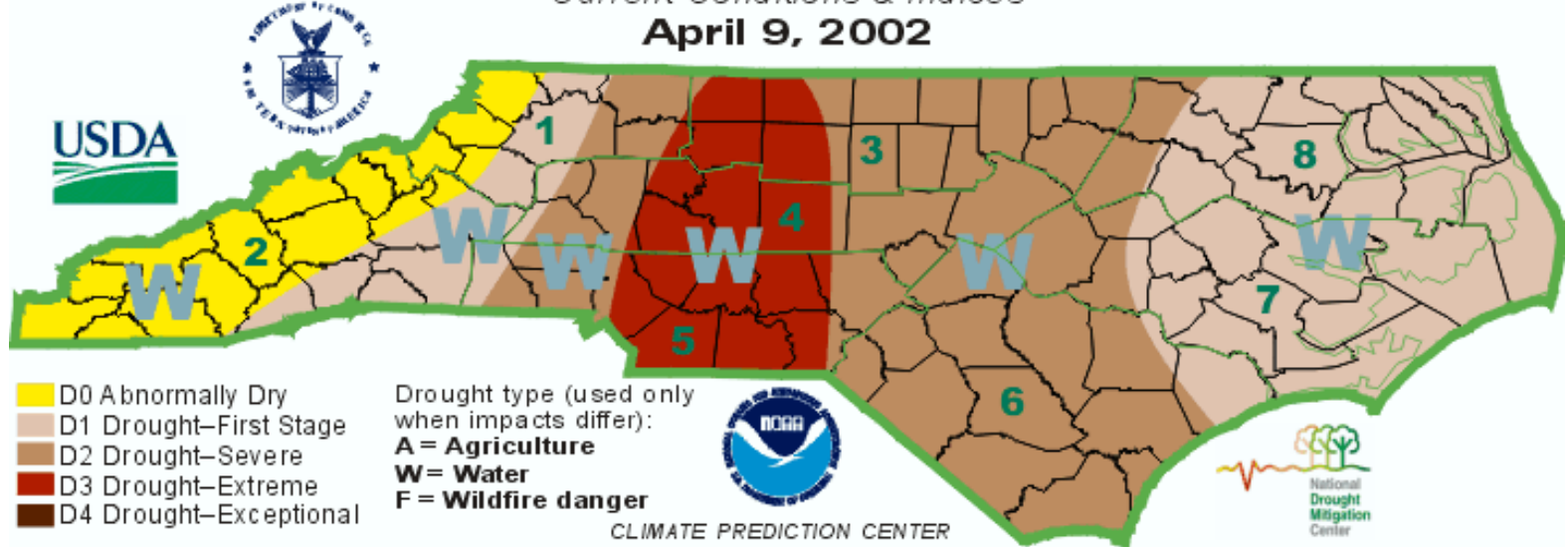
About Us

contact us: [drought@news.ncwater.org](mailto:drought@news.ncwater.org)

### North Carolina Drought Status

Current Conditions &amp; Indices

April 9, 2002



The long-term (hydrological) drought generally remained entrenched in central North Carolina—even after favorable short-term weather (near to above normal March precipitation) as current stream flows have quickly dropped to very low levels. The US Drought Monitor April 9, 2002 map has central portions of the Piedmont area in North Carolina labeled as extreme drought with severe to moderate drought for the remainder of the state.

Reporting USGS river gages hit instantaneous record low flows NC (21%), while at least one-third of the weekly (April 2-8) average stream flows were in the lower tenth percentile of average flow for this time of the year. Record low groundwater levels continue at many monitoring well sites in the areas of extreme drought. Since August 1, 2001, 8-month precipitation percentiles were less than 2% from New Jersey southward into central South Carolina, corresponding to 9-15 inch deficits..

As the demand for water increases during the spring and summer, the magnitude of the drought effects will increase. The North Carolina Drought Monitoring Council is asking water systems to improve their understanding of drought and the factors that influence their vulnerability to extended periods of water shortage. A water shortage response plan can help reduce the effect of a drought on most water systems.

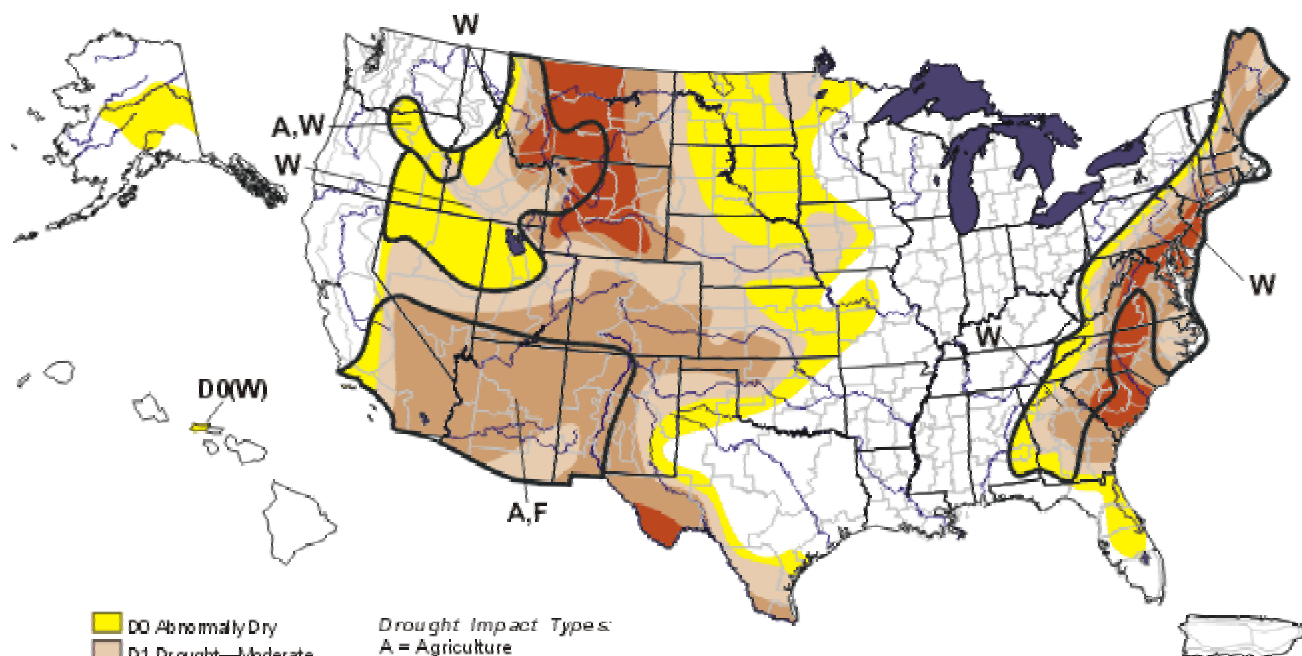
Nine drinking water systems continue to operate under mandatory conservation restrictions and 15 have voluntary restrictions because of the drought. Systems in the western Piedmont are having the most difficulty.

[LATEST PRESS RELEASE](#) - Water Sources Task Force Meeting (3/22/2002)

# U.S. Drought Monitor

April 16, 2002

Valid 8 a.m. EDT



- D0 Abnormally Dry
- D1 Drought—Moderate
- D2 Drought—Severe
- D3 Drought—Extreme
- D4 Drought—Exceptional

*Drought Impact Types:*

A = Agriculture

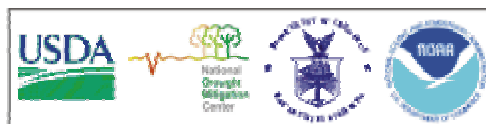
W = Water (Hydrological)

F = Fire danger (Wildfires)

— Delineates dominant impacts  
(No type = All 3 impacts)

*The Drought Monitor focuses on broad-scale conditions.  
Local conditions may vary. See accompanying text summary  
for forecast statements.*

<http://drought.unl.edu/dm>



**Released Thursday, April 18, 2002**

**Author: David Miskus, JAWF/CPC/NOAA**

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Short-term forecasted weather features scattered showers to most of the Southeast that may affect abnormally dry or drought areas during the next 5 days (April 11-15).

The NOAA Climate Prediction Center seasonal drought outlook for North Carolina through June 2002 shows slow improvement likely with some water shortages to persist.

[LATEST PRESS RELEASE](#) - Water Sources Task Force Meeting (3/22/2002)

## Drought Monitoring

[U.S. Drought Monitor](#)

[Palmer Drought Index](#)

[USGS Monthly Conditions](#)

## Outlook

[Seasonal U.S. Drought Outlook](#)

[El Nino / La Nina](#)

[5-Day State Forecast](#)

## Precipitation

[USGS Real-time precipitation data](#)

[Total Precipitation \(inches\)](#)

[Percent of Normal Precipitation \(monthly\)](#)

[Percent of Normal Precipitation \(3 months\)](#)

[Precipitation Accumulation \(3 years\)](#)

## Reservoirs/Lake Levels

[Corps of Engineers](#)

[Duke Power Company](#)

[Yadkin-Alcoa Power](#)

[Nantahala Power and Light](#)

[Tennessee Valley Authority](#)

## Streamflows/Ground Water

[Drought Indicator Wells](#)

[US Geological Survey Drought Watch](#)

[Streamflow Gages by County](#)

[Map of Real-time Stream Flow](#)

[Map of Below Normal 7-day average](#)

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[Current Keetch - Byram Drought Index](#)

[Fire Weather/Danger Information](#)

[Wildfire Information](#)

## Crops

[NC Dept. of Agriculture Crop Weather](#)

[Crop Moisture Index](#)

[Crop Strategies for Drought Management](#)

## Drought Related Links

[NC-DWR Water Conservation Page](#)

[Climate Prediction Center](#)

[State Climate Office of NC](#)

[National Drought Mitigation Center](#)

[Southeast Regional Climate Center](#)

## Public Water Supplies

[Water Systems that have enacted water use restrictions](#)

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# U. S. Seasonal Drought Outlook

Through July 2002

Released April 18, 2002



Some Improvement  
Likely:  
Scattered Water  
Shortages

Likely to Persist

Improvement  
Likely

Some  
Improvement  
Likely:  
Scattered Water  
Shortages

Likely to Persist

## KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve
-  Drought development likely

Depicts general, large-scale trends based on subjectively derived probabilities guided by numerous indicators, including short and long-range statistical and dynamical forecasts. Short-term events-- such as individual storms -- cannot be accurately forecast more than a few days in advance, so use caution if using this outlook for applications-- such as crops -- that can be affected by such events. "Ongoing" drought areas are schematically approximated from the Drought Monitor. For weekly drought updates, see the latest Drought Monitor map and text.



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The Council recommends that water systems continue to closely monitor their water supply and start conservation measures early as needed to reduce water demand and hopefully avoid the need for more severe water use restrictions later. For water systems without specific triggers for enacting water use restrictions, the Council recommends:

- **Systems with water supply reservoirs** should request voluntary conservation when less than 80% of the useable water supply storage is remaining. Mandatory water use restrictions should be imposed when 60% or less of the useable storage is remaining.
- **Systems with run-of-river intakes** should impose mandatory water use restrictions if demand is exceeding 50% of the estimated streamflow above their intake that is available for water supply.
- **Ground water systems** should check water levels in their wells weekly and monitor the number of hours each well is pumped daily. If water levels decline markedly or if pumping from wells is consistently more than 12 hours, water systems should impose water use restrictions.
- **Systems that depend on purchased water supplies** should work closely with the supplier to assure an adequate water supply.

**Water Conservation for Industry** ---- The N.C. Division of Pollution Prevention and Environmental Assistance offers free, non-regulatory onsite visits to industrial water customers to identify water conservation opportunities. These consultations can help reduce costs and eliminate waste. For more information, visit [www.p2pays.org](http://www.p2pays.org) and click on the "Industries" link or contact Rusty Harris-Bishop at 919-733-4398.

### [LATEST PRESS RELEASE](#) - Water Sources Task Force Meeting (3/22/2002)

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The North Carolina Drought Monitoring Council is organized to coordinate activities of state agencies in the assessment and the response to drought and activates the [Drought Assessment and Response Plan](#), a part of the North Carolina Emergency Operations Plan. The Council assesses and projects the impact of drought on water users and issues special reports describing areas of concern. It identifies the need for additional water supply information, and compiles assessments of the capability of water supplies to withstand drought impact.

**[LATEST PRESS RELEASE](#)** - Water Sources Task Force Meeting (3/22/2002)

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# NORTH CAROLINA DROUGHT MONITORING COUNCIL

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 contact us: [drought@news.ncwater.org](mailto:drought@news.ncwater.org)

**Public Water Supplies** The following public water supply systems have enacted water use restrictions:  
(Updated March 21, 2002)

[Click here](#) to notify the Drought Monitoring Council when your water system imposes voluntary or mandatory water use restrictions.

County	System	Water Conservation Level
Cabarrus	Concord	Mandatory
Cabarrus	Harrisburg	Mandatory
Cabarrus	Kannapolis	Mandatory
Catawba	Maiden	Voluntary
Clay	Clay County	Mandatory
Durham	Durham	Voluntary
Franklin County	Franklin County	Voluntary
Gaston	Cherryville	Voluntary
Granville	Oxford	Voluntary
Guilford	Greensboro	Mandatory
Iredell	Bridgeport Castaway SD	Voluntary
Madison	Marshall	Voluntary
Mecklenberg	Charlotte	Voluntary
Mecklenberg	River Point Estates SD	Voluntary
Onslow	Onslow County	Voluntary
Orange	Hillsborough	Mandatory
Orange	Orange-Alamance	Mandatory
Rowan	China Grove	Mandatory
Rowan	Landis	Mandatory
Union	Monroe	Voluntary
Vance	Henderson	Voluntary
Vance	Kittrell	Voluntary
Vance	Soul City	Voluntary
Vance	Kerr Lake Regional	Voluntary
Warren	Warrenton	Voluntary

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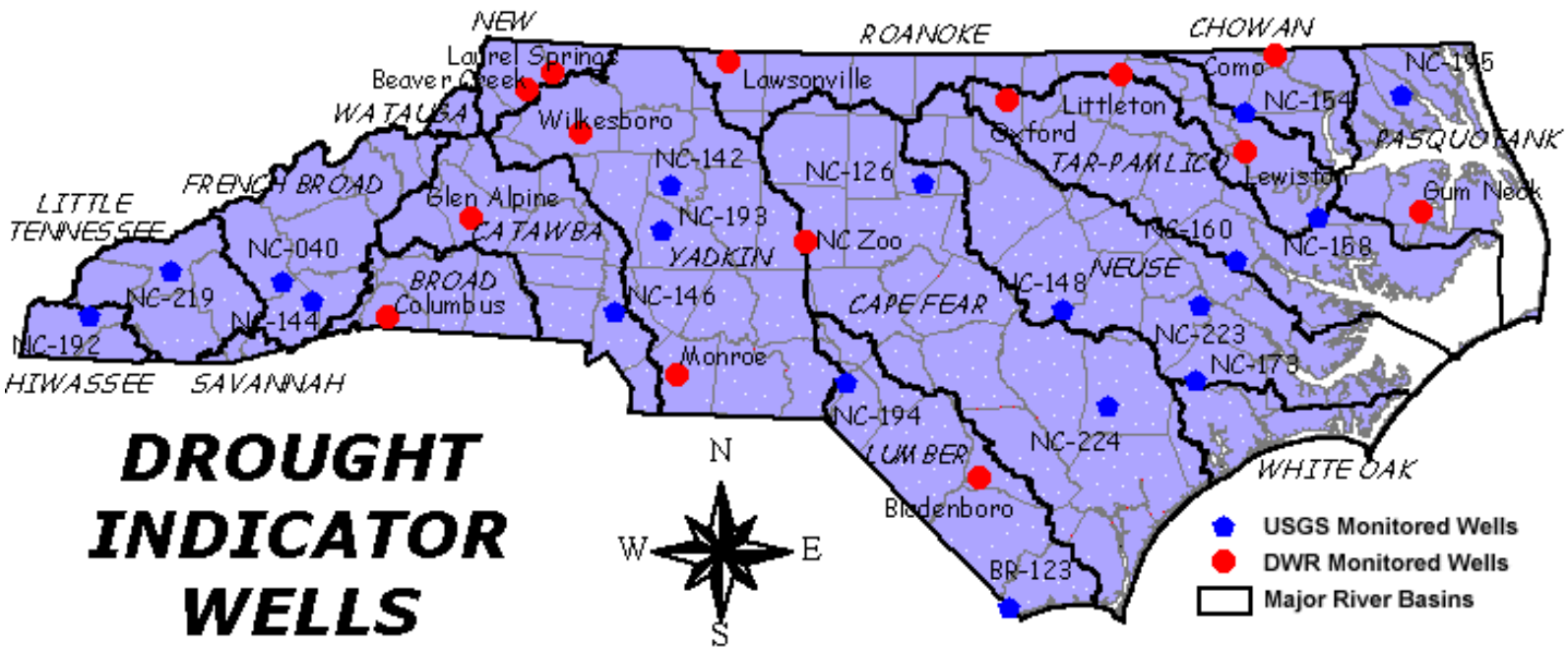
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



## NC Precipitation Summary week ending April 9, 2002

Location	Total This Week		Total Since January 1 2002		
	Total	Departure Form Normal	Total	Departure From Normal	Percent of Normal Since
Asheville	1.08	0.31	10.35	-3.03	77%
Aurora	0.26	-0.44	16.16	3.47	127%
Charlotte	0.26	-0.34	10.77	-2.51	81%
Clinton	0.18	-0.57	14.91	1.46	111%
Concord	0.13	-0.57	11.4	-1.89	86%
Eden	0.09	-0.61	8.78	-3.68	70%
Elizabeth City	0.98	0.34	17.06	3.95	130%
Fayetteville	0.77	0.07	10.31	-2.71	79%
Goldsboro	1.23	0.46	13.43	-0.43	97%
Greensboro	0.19	-0.44	7.8	-3.71	68%
Hayesville	0.6	-0.1	15.85	3.08	124%
Hickory	0.44	-0.34	10.67	-3.56	75%
Jackson Springs	0.37	-0.33	10.65	-2.94	78%
Jefferson	0.32	-0.53	9.78	-3.27	75%
Kinston	0.53	-0.24	15.61	2.06	115%
Laurinburg	0.14	-0.52	9.62	-4.12	70%
Lexington	0.08	-0.66	12.18	-1.17	91%
Lincolnton	0.44	-0.31	11.67	-1.89	86%
Marshall	0.35	-0.42	10.41	-1.54	87%
Mount Airy	0.44	-0.4	10.11	-2.5	80%
New Bern	0.08	-0.62	14.37	0.49	104%
North Wilkesboro	1.01	0.1	12.45	-1.7	88%
Old Fort	1.05	0.24	12.79	-1.99	87%
Raleigh-Durham	0.57	0.01	11.67	-0.46	96%
Oxford	0.4	-0.26	8.73	-3.43	72%
Roanoke Rapids	0.43	-0.27	12.7	-0.12	99%
Rocky Mount	0.05	-0.65	11.35	-1.56	88%
Siler City	0.15	-0.55	11.59	-2.22	84%
Whiteville	0.36	-0.31	10.65	-2.77	79%
Williamston	0.79	0.09	16.94	3.83	129%
Wilmington	0.25	-0.38	9.71	-3.06	76%

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Well Name Entire Record	Monthly Stats	County	River Basin
<a href="#">Columbus</a>		Polk	Broad
<a href="#">NC Zoo</a>		Randolph	Cape Fear
<a href="#">UNC Campus (NC-126)</a>		Orange	Cape Fear
<a href="#">Rose Hill (NC-224)</a>		Duplin	Cape Fear
<a href="#">Hornets Nest Park (NC-146)</a>		Mecklenburg	Catawba
<a href="#">Glen Alpine</a>		Burke	Catawba
<a href="#">Como</a>		Hertford	Chowan
<a href="#">Roxobel (NC-154)</a>		Bertie	Chowan
<a href="#">Blantyre (NC-144)</a>		Transylvania	French Broad
<a href="#">Champion (NC-040)</a>		Haywood	French Broad
<a href="#">American Thread (NC-192)</a>		Cherokee	Hiwassee
<a href="#">Bryson City (NC-219)</a>		Swain	Little Tennessee
<a href="#">Jordan Creek (NC-194)</a>		Scotland	Lumber
<a href="#">Calabash (BR-123)</a>		Brunswick	Lumber
<a href="#">Bladenboro</a>		Bladen	Lumber
<a href="#">Grantham (NC-148)</a>		Wayne	Neuse

Well Name Entire Record	Monthly Stats	County	River Basin
<a href="#">Comfort (NC-173)</a>		Jones	Neuse
<a href="#">Grainger (NC-223)</a>		Lenoir	Neuse
<a href="#">Beaver Creek</a>		Ashe	New
<a href="#">Laurel Springs</a>		Alleghany	New
<a href="#">Elizabeth City (NC-195)</a>		Pasquotank	Pasquotank
<a href="#">Gum Neck</a>		Tyrrell	Pasquotank
<a href="#">Lawsonville</a>		Stokes	Roanoke
<a href="#">Lewiston</a>		Bertie	Roanoke
<a href="#">Van Swamp (NC-158)</a>		Washington	Roanoke
<a href="#">Simpson (NC-160)</a>		Pitt	Tar-Pamlico
<a href="#">Oxford</a>		Granville	Tar-Pamlico
<a href="#">Littleton</a>		Warren	Tar-Pamlico
<a href="#">Mocksville (NC-142)</a>		Davidson	Yadkin
<a href="#">Barber (NC-193)</a>		Rowan	Yadkin
<a href="#">Monroe</a>		Union	Yadkin
<a href="#">Wilkesboro</a>		Wilkes	Yadkin

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# N.C. Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

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Release: Immediate

Contact: Johanna Reese 919-715-7357

Date: March 22, 2002

Distribution: Statewide

## RAIN FALLS, DROUGHT WORSENS

RALEIGH - Last week the drought in North Carolina worsened, as the western Piedmont moved from severe into extreme drought - one step away from the worst category, according to the U.S. drought monitor. The majority of the rest of the state remains in a severe drought.

While rain across the state gave the perception that drought conditions have improved, the Water Sources Task Force yesterday heard reports that three months of twice the normal rainfall would be needed to approach an end to the drought. Normal rainfall would help communities avoid a water crisis, but would not improve the situation.

Rainfall was below normal for February, and meteorologists expect March to also end with below normal levels.

North Carolina is in its fourth year of drought conditions, so groundwater and lakes have not been able to refill during wet seasons. Rainfall this winter could be one of the three lowest of record. Population and industrial growth have increased demands on water systems, making the situation more critical.

As the demand for water increases during the spring and summer, the magnitude of the drought effects will increase. The task force is asking water systems to improve their understanding of drought and the factors that influence their vulnerability to extended periods of water shortage. A water shortage response plan can help reduce the effect of a drought on most water systems.

Several water systems remain under mandatory water conservation measures, including the towns of Concord, Landis, Kannapolis, and China Grove. Many other systems are operating under voluntary conservation.

For more information on the drought, visit [www.ncwater.org/](http://www.ncwater.org/) and click on "Drought Monitoring." The U.S. Drought Monitor can be seen at <http://enso.unl.edu/monitor/monitor.html>.

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1601 Mail Service Center, Raleigh, NC 27699-1601

North Carolina Division of Water Resources



# WATER CONSERVATION



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and Your Community

...Helps to Insure

the Reliability of Our Water Supply

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## **In Your Own Backyard**

Watering **Your** Lawn

**XERISCAPING**

Some Tips (pdf file)

## **For Water Systems**

Water Conservation Plan (pdf file)

Leak Detection

Water Shortage Response Ordinance

NC Drought Conditions

## **Related**

Ground Water

Project WET

NC Pollution Prevention & Env. Assistance

EPA Guidelines for Water Conservation

## **LINKS**



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